

What is claimed is:

- 1           1. A communications system comprising:  
2           an encoder to encode a digitized speech signal;  
3           a communication link communicatively coupled to the encoder;  
4           a decoder communicatively coupled to the encoder via the  
5           communication link; and  
6           a short term excitation enhancement circuit in communication with  
7           the encoder and the decoder.
- 1           2. The system according to claim 1 where the decoder includes the short  
2           term excitation enhancement circuit.
- 1           3. The system according to claim 1 where the short term excitation  
2           enhancement circuit operates to improve the perceptual quality of speech data for  
3           reproduction.
- 1           4. The system according to claim 1 where the system employs eXtended  
2           code-excited linear prediction.
- 1           5. The system according to claim 1 where the system employs code-  
2           excited linear prediction.
- 1           6. The system according to claim 1 where the short term excitation  
2           enhancement circuit is distributed between the encoder and the decoder.
- 1           7. The system according to claim 1 where the short term excitation  
2           enhancement circuit places at least one pulse, in addition to at least one current  
3           excitation pulse, within a speech sub-frame.
- 1           8. The system according to claim 7 where the short term excitation  
2           enhancement circuit uses a weighted excitation pulse to estimate a location of a  
3           correlation peak within the speech sub-frame.

1           9.     The system according to claim 8 where the short term excitation  
2 enhancement circuit uses the estimated location of the correlation peak to place the at  
3 least one pulse.

1           10.    The system according to claim 1 where the short term excitation  
2 enhancement circuit performs short term excitation within a pitch lag.

1           11.    A communications system comprising:  
2               a short term excitation enhancement circuit that improves the  
3 perceptual quality of speech data for reproduction.

1           12.    The system according to claim 11 where the short term excitation  
2 enhancement circuit places at least one pulse, in addition to at least one current  
3 excitation pulse, within a speech sub-frame.

1           13.    The system according to claim 12 where the short term excitation  
2 enhancement circuit uses a weighted excitation pulse to estimate a location of a  
3 correlation peak within the speech sub-frame.

1           14.    The system according to claim 13 where the short term excitation  
2 enhancement circuit uses the estimated location of the correlation peak to place the at  
3 least one pulse.

1           15.    The system according to claim 11 where the short term excitation  
2 enhancement circuit performs short term excitation within a pitch lag.

1           16     The system according to claim 11 where the system employs eXtended  
2 code-excited linear prediction.

1           17.    The system according to claim 11 where the system employs code-  
2 excited linear prediction.

1           18.    The system according to claim 11 where the short term excitation  
2 enhancement circuit is included on a decoder of the communication system.

1 19. A method to perform excitation enhancement on speech data, the  
2 method comprising:  
3 analyzing a coded signal; and  
4 performing short term excitation enhancement in accordance with the  
5 analyzed coded signal.

1 20. The method according to claim 19 where the analyzed coded signal  
2 includes a past weighted excitation signal.

1 21. The method according to claim 19 where analyzing the coded signal  
2 further includes estimating a location of a correlation function within a current sub-  
3 frame.

1 22. The method according to claim 21 where estimating the location of the  
2 correlation function is based on a past weighted excitation signal.

1 23. The method according to claim 22 further comprising adding a pulse,  
2 in addition to at least one current excitation pulse, to a current sub-frame to produced  
3 an enhanced excitation signal.

1 24. The method according to claim 23 further comprising using the  
2 enhanced excitation signal during the reconstruction of the original speech signal.

1 25. The method according to claim 22 further comprising transmitting  
2 the weighted excitation signal from an encoder to a decoder via a communication  
3 link.

1 26. The method according to claim 19 further comprising performing  
2 code-excited linear prediction to generate the coded signal.

1 27. The method according to claim 19 further comprising performing  
2 eXtended code-excited linear prediction to generate the coded signal.